

Work Order ID 74978

74978

Page 1

October-14-11 8:49:50 AM

Item ID: D212-664-107 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Low Standard Fwd
 Start Date: 14/10/2011 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 28/10/2011 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: MLJ Date: 11/10/11 Tooling: _____ Date: _____
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____
 Run Start ***NR1***
 Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D212-664-147	Rev B (DEO)								
100	DOCUMENT CONTROL	0.00							
100									
DC	Memo	0.00							
Document Control	Photocopy bluefile and create labels as per PPP D212-664-107 CHG002								
110	Packaging	0.00							
110									
Packaging	Memo	0.00							
Packaging									
120	BENDING MACHINE - CROSSTUBES	0.00							
120									
CNC Bend 2	Memo	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D212-664-107 using CNC bender program 212-107								

Handwritten: MLJ 11-10-27 (1)

Handwritten: Sub 127

Handwritten: JW

Handwritten: 11-10-17

Handwritten: JW

Handwritten: 11-10-17

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Item ID: D212-664-107

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 28/10/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

130 QC15- Crosstube Dimensional Check

0.00

8 11/10/18

130

QC Memo

0.00

Quality Control

140 Crosstubes

0.00

140

Crosstubes Memo

0.00

Crosstubes 1-Cut tube as per inspection dwg and deburr ends. ***ensure saw is square***

JW 11-10-19

2-Position cuffs on tube ensure proper positioning

3-Drill tube as per dwg using DT8577 location #7 & # 212 ULF using jig DT8548 and DT8549 as per QSI 10

8 11-10-20

4-Transfer drill rivet holes from cuff into tube.

5-Identify cuff position and Batch # on each and identify tube as per dwg D212-664-107.

6- Inspect surface damage

7- Deburr and realodine cuff.

> mo 11/10/20

Dart Aerospace Ltd

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150 *150* HandFXtube Hand Finishing Crosstubes	Crosstubes Chemical Conversion Memo	0.00 0.00		MOB 11/10/20					
160 *160* QC Quality Control	QC3- Inspect Part Finish Memo	0.00 0.00						RET 11-10-24	
170 *170* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00						11 10 24 (3)	

POSITIVE RECALL
 EFFECTIVE 11/10/24 AUTH [Signature]
 RELEASED _____ DATE _____

Dart Aerospace Ltd

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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 14/10/2011 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 28/10/2011 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Run Start *NR1*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop *NR2*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

180 Outsource process - NDT per QSI038 4.1

180

Outsource2

Outsource process - NDT

Memo 0.00
Liquid Penetrant Inspection as per QSI 038Or
Issue P/O: 15240 PI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

190	0.00
-----	------

190

Packaging

Packaging

Packaging	
Memo	0.00
Ensure copy of NDT results attached to work order.	

200	QC5- Inspect part completeness to step on W/O	0.00
-----	---	------

200

QC

Quality Control

Memo	0.00
Inspect for damage & ensure results are as per Dwg D212-664-107	

Dart Aerospace Ltd

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N900040100

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Stop *NS2*

Start Date: 14/10/2011 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 28/10/2011 Req'd Qty: 1.00 * 1 *

Customer:

Reference:

Run Start *NR1*

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop ***NR2***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

210

210

Crosstubes

Crosstubes

Crosstubes

Memo

1-Rivet Cuffs as per Dwg D212-664-147. with Sika flex in Between tube & Cuff
A/R SIKAFLEX -241/-291 BATCH: 118393

0.00

0.00

0.00

0.00

SprayPaint

Memo

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per OSI 005 4.2

PRIME:

Start Time: 1030

Fininsh Time: 11:30

PAINT:

Start Time: 3:30

Finish Time: 4:30

Dart Aerospace Ltd

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	QC14- Inspect Spray Paint	0.00							
230									
QC	Memo	0.00							
Quality Control	Wrap in plastic bag to protect from scratches								
240		0.00							
240	Crosstubes								
Crosstubes	Memo	0.00							
Crosstubes	1- Assemble as per Dwg D212-664-147								
	1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper, clean the area with 4105S wash 'n' wipe								
	2-Install supports with Proseal 890 per DSI9563 and QSI 015 A/R Proseal 890 Batch: <u>118234</u>								
	3- Torque bolts as per dwg <u>11/10/27</u>								

25 11-10-26

11 10 26 ①

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Work Order ID 74978

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Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 28/10/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	QC5- Inspect part completeness to step on W/O	0.00							
250									
QC	Memo	0.00							
Quality Control									
255	Pick Kit	0.00							
255									
Packaging	Memo	0.00							
Packaging									
260	QC4- 100% Inspect kits for completeness	0.00							
260									
QC	Memo	0.00							
Quality Control									

8/10/27

74

8/11-10-27

8/11/27

74

Dart Aerospace Ltd

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Page 8

Item ID: D212-664-107

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Item Name: Crosstube Low Standard Fwd

Stop ***NS2***

Start Date: 14/10/2011 Start Qty: 1.00

1

Cust Item ID:

Required Date: 28/10/2011 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270		0.00							
270	Packaging								
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D212-664-107								
	<i>NEVC</i>								
280		0.00							
280	QC21- Final Inspection - Work Order Release								
QC	Memo	0.00							
Quality Control									

P4110/200

11/10/31

UMF 11-10-28

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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Picklist Print

October-14-11 8:49:56 AM

Page 1

Work Order ID: 74978

74978

Parent Item: D212-664-107

D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011

Required Date: 28/10/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:A New Issue 07.09.12 EC verified by: JLM
 IPP Rev:B ECN 1100 08-01-11 DD verified by: EC
 IPP Rev:C Ecn 1121 08-02-25 DD Verified by:ec IPP Rev:D
 10.05.27 added pick kit DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D212-664-107TRN *D212-664-107TRN* Crosstube Turning Detail		Manufactured	No	B74570		140	Each	1.0000	1	1			

**

JW 11-10-17

Location Loc Qty Loc Code

LG 1
67429 1

D3659-1 Manufactured No

220

Each

5.0000

2

2

D3659-1

CUFF

**

11-10-20

Location Loc Qty Loc Code

ST477 3
67005 3
ST482 2
71868 2

CR3212-4-06 Purchased No

240

Each

774.0000

44

44

CR3212-4-06

CHERRY RIVET

**

11/10/25

Location Loc Qty Loc Code

ST311 774
112492 18
112794 756

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____
Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

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Picklist Print

October-14-11 8:49:56 AM

Page 2

Work Order ID: 74978

74978

Parent Item: D212-664-107

D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011

Required Date: 28/10/2011

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Manufactured No

240

Each

137.5600

4

4

D3595-063-450

RUBBER CUSHION

**

m/14/10/25

Location

Loc Qty

Loc Code

LG

107.76

67353

3

68893

6

70113

0.56

71354

0.2

74113

98

LG055

29.8

72967

29.8

MS21920-25

Purchased

No

240

Each

104.0000

4

4

MS21920-25

Clamp(per MIL-DTL-8783C)

**

m/11/10/25

Location

Loc Qty

Loc Code

LG

48

113281

0

113282

0

118142

4

118183

44

LG050

56

116264

2

117998

4

119227

50

D2893-1

Manufactured

No

240

Each

20.0000

2

2

D2893-1

2.75 Support

**

m/14/10/25
72865

Location

Loc Qty

Loc Code

LG052

20

~~73586~~

2

72865

18

October-14-11 8:49:56 AM

Shop Packet Print

Page 2

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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Parent Item: D212-664-107

D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011

Required Date: 28/10/2011

Start Qty: 1.00

Required Qty: 1.00

D3428-1

Manufactured No

260

Each

25.0000

1

1

D3428-1

Placard

**

SP

Location

Loc Qty

Loc Code

ST053

25

72048

5

73498

20

Purchased

No

260

Each

64.0000

4

4

AN6-35A

AN6-35A

BOLT

**

SP

Location

Loc Qty

Loc Code

ST343

64

118422

34

118838

30

Purchased

No

260

Each

65.0000

4

4

AN6-36A

AN6-36A

Bolt

**

SP

Location

Loc Qty

Loc Code

ST343

65

118012

1

118422

34

118838

30

4x

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____
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D212-664-107

Parent Item Name: Crosstube Low Standard Fwd

Start Date: 14/10/2011

Required Date: 28/10/2011

Start Qty: 1.00

Required Qty: 1.00

MS21042L6

Purchased

No

260

Each

1,792.000

6

6

MS21042L6

**

Nut

Location

Loc Qty

Loc Code

ST300

792

117677

136

118384

8

118927

48

118968

600

ST518

1000

119075

1000

AN960JD616

NAS1149D0663J

Purchased

No

260

Each

0.0000

18

18

AN960JD616

**

Washer

SP 11-10-27

m/18614

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

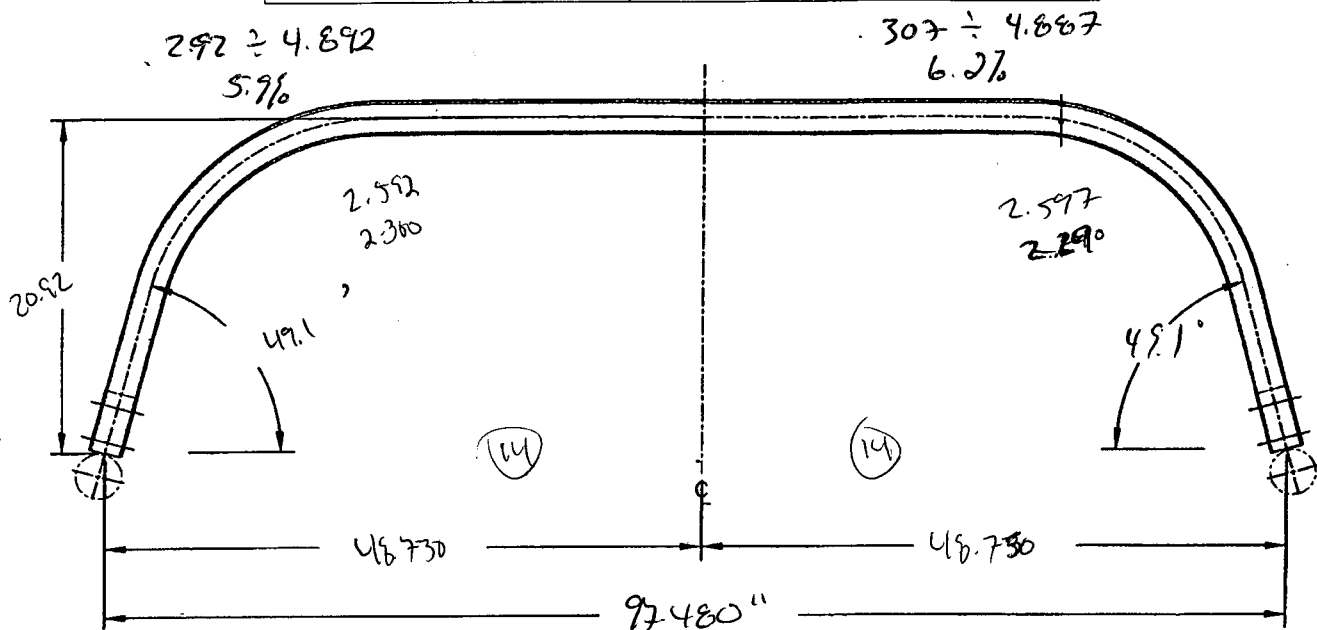
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	74978
Description: Crosstube Low Fwd (205/212/412)		Part Number:	D212-664-107
Inspection Dwg: D212-664-147 Rev: B		Page 1 of 1	

Required Dimension	Min	Max
Height	20.79	21.05
1/2 Span	48.55	48.81
Angle	49	52
Total Span	97.1	97.62



Comments
Side A = 5.9% crushing @ 14 Pages
Side B = 6.2% crushing @ 14 Pages
(see note 10)

QC15 Inspection	<i>[Signature]</i>
Date	11/10/18

Rev	Date	Change	Revised by	Approved
A	08.02.29	New Issue	KJ/JM	
B	10.01.21	Dwg Rev updated	KJ <i>[Signature]</i>	<i>[Signature]</i>

Dart Aerospace Ltd

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Item	Qty -147	Qty -147B	Part Number	Description
1	X		D212-664-147	CROSSTUBE ASSEMBLY (205/212/412 LOW FWD)
2		X	D212-664-147B	CROSSTUBE ASSEMBLY (214 LOW FWD)
3	1	1	D6019-128	CROSSTUBE
4	2	2	D2893-1	SUPPORT
5	4	4	D3595-063-450	RUBBER CUSHION
6	2	2	D3659-1	CUFF
7	4	4	MS21920-25	CLAMP (OR MS21920-26)
8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
10	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6019-128
FINISHED LENGTH = 126.528±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF
USING VIBRATING STYLUS.
- 7) WEIGHT: D212-664-147 = 24.2 lbs (PER IIN-D212-664)
D212-664-147B = 24.2 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE
- 9) WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD
BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6%
BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF
D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER
INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1
SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE
SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.
DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE
UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS
NOT BOTTOMED-OUT AFTER TORQUING.
- 16) INSTALL D3659-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF
SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE.
SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

NO. 74978 M.L.J

11/10/14

DEO ATTACHED

Per EOW #11-64
11-07-26
UNDER REVIEW
11/10/14

RELEASED
R 2009-10-29

8	REVISE GENERAL NOTES/PART LIST; UPDATE TO CURRENT STANDARDS: ADD -147B (ZN C4-2, D4-2)	RF	09.09.30
A	NEW ISSUE	CP	07.07.97
REV.	DESCRIPTION	BY	DATE
DESIGN	9		
DRAWN	RF		
CHECKED	9		
MFG. APPR.	11		
APPROVED	11		
DE APPR.	11		
DATE	09.09.30		

DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA
DRAWING NO. D212-664-147
TITLE CROSSTUBE (205/212/412 LOW FWD)
REV. B
SHEET 1 OF 4
SCALE NTS

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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

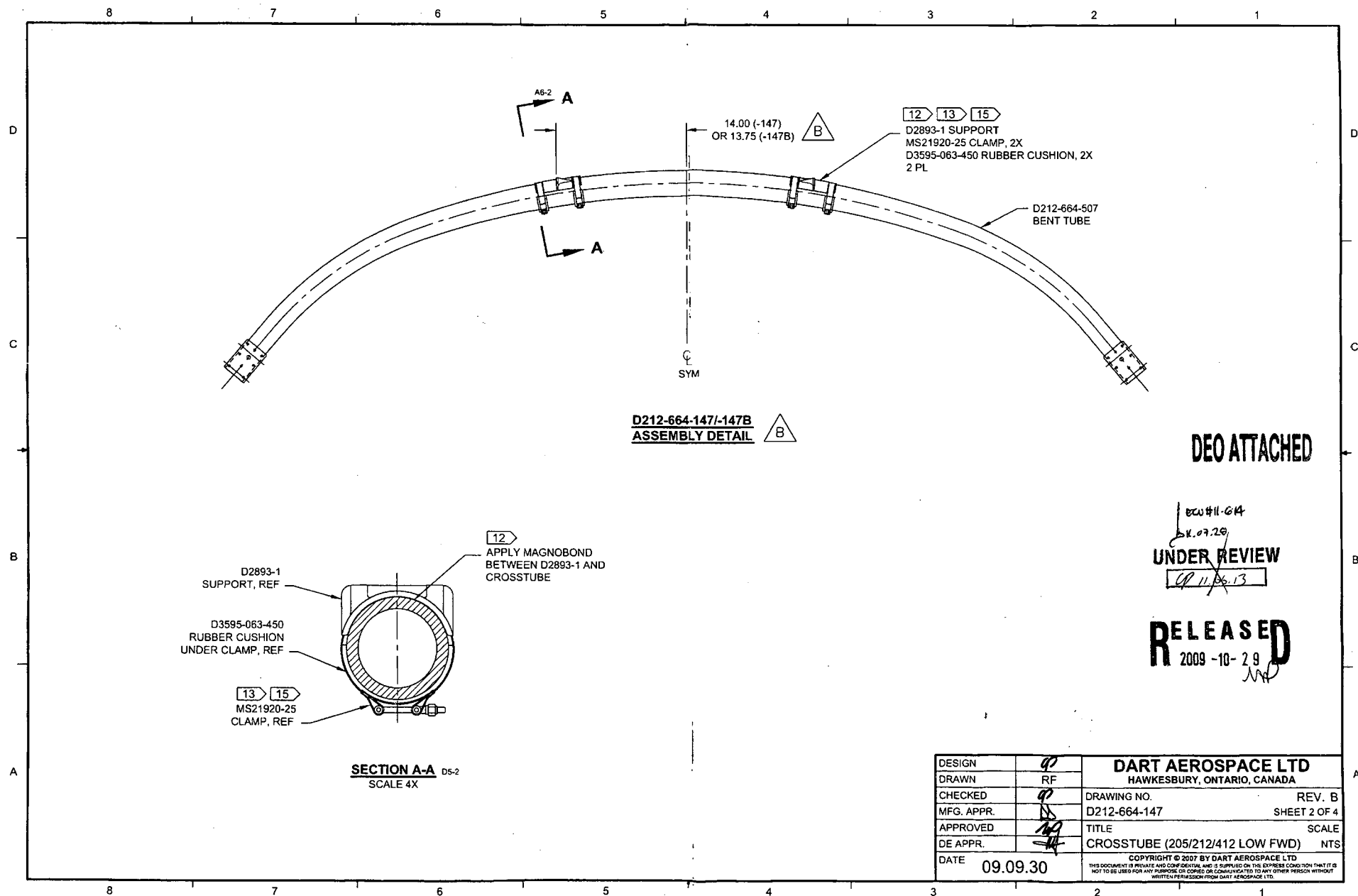
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

74978



DEO ATTACHED

BCU #11-614
 21.07.20
 UNDER REVIEW
 11.06.13

RELEASED
 2009-10-29

DESIGN	90	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	90	DRAWING NO.	REV. B
MFG. APPR.	90	D212-664-147	SHEET 2 OF 4
APPROVED	90	TITLE	SCALE
DE APPR.	90	CROSSTUBE (205/212/412 LOW FWD)	NTS
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Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

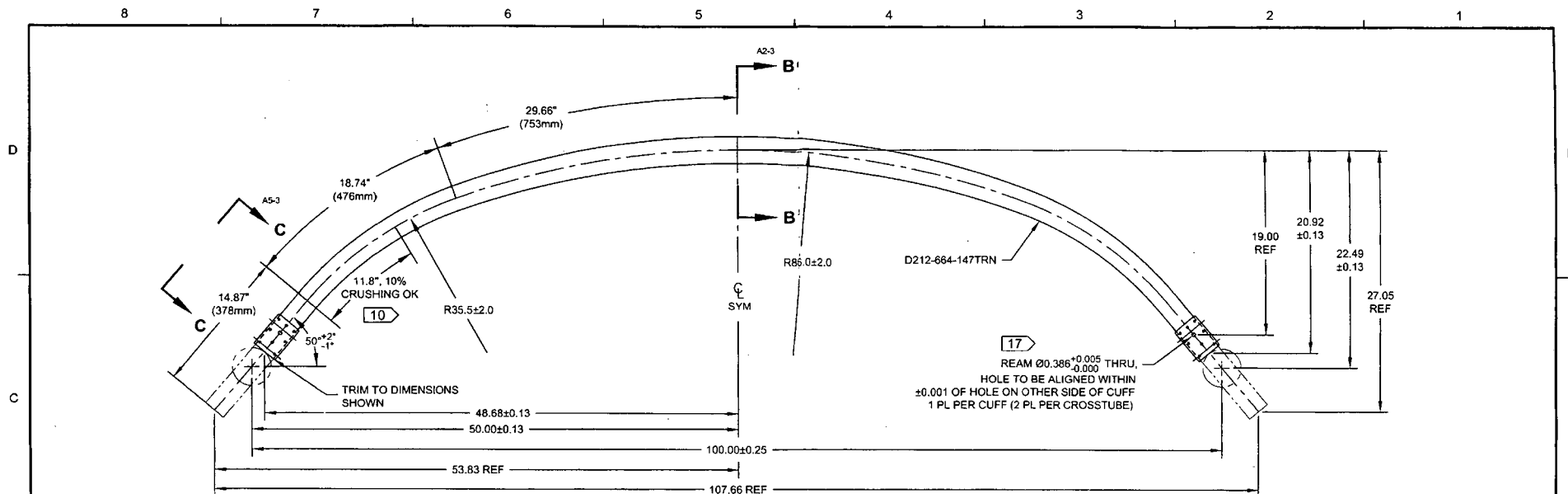
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

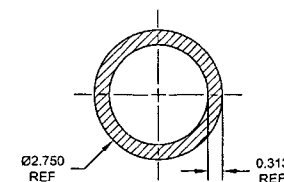
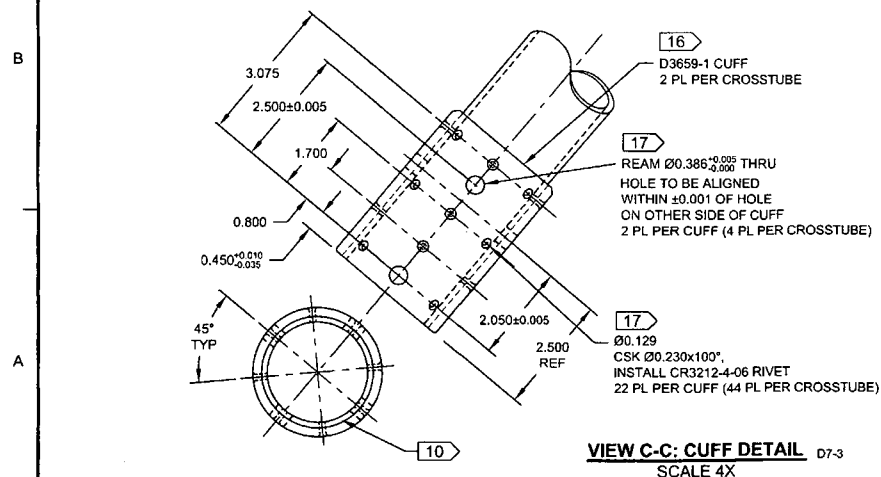
NOTE: Date & initial all entries

74978



D212-664-507
BENDING AND DRILLING DETAIL 10 B

DEO ATTACHED



SECTION B-B D5-3
 SCALE 4X

UNDER REVIEW

RELEASED
 2009-10-29

DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. B
CHECKED	RF	D212-664-147	SHEET 3 OF 4
MFG. APPR.	RF	TITLE	SCALE
APPROVED	RF	CROSSTUBE (205/212/412 LOW FWD)	NTS
DE APPR.	RF	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIES OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	09.09.30		

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

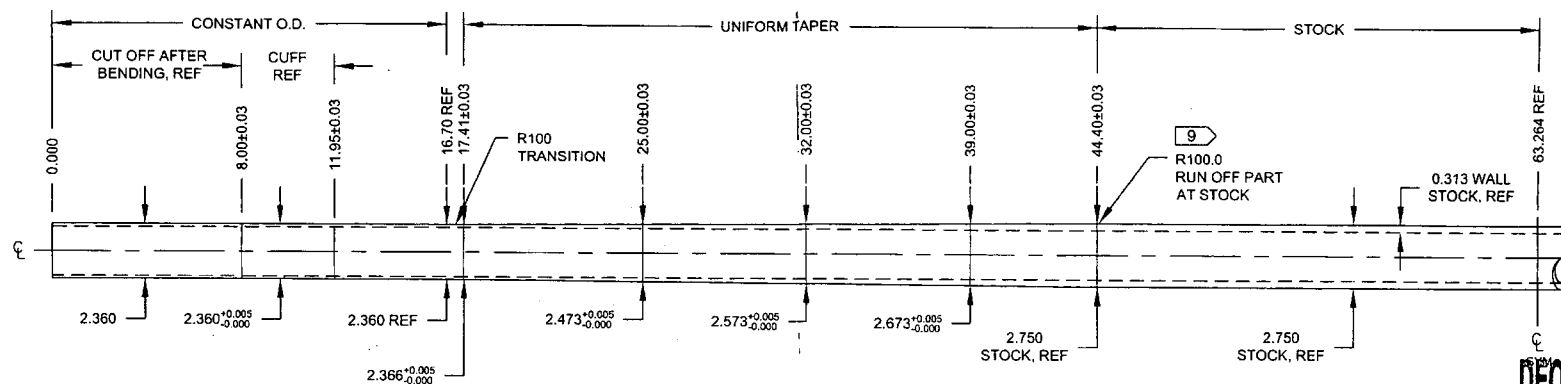
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

74978



D212-664-147TRN
TURNING DETAIL

DEO ATTACHED

ECO #1-614
11.07.26

UNDER REVIEW

RELEASED
2009-10-29

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. B
MFG. APPR.	RF	D212-664-147	SHEET 4 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE (205/212/412 LOW FWD)	NTS
DATE	09.09.30	COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

74978

DRAWING NO. D212-664-147	TITLE CROSSTUBE ASS'Y (205 LOW FWD)	REV. B	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D212-664-147-B-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN 97	CHECKED ASS	MFG. APPR. 18	APPROVED W.D.		DE APPR. H		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:**IS:**

Item	Qty -147	Qty -147B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2893-1 SUPPORT: ABRASE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2893-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
W.D.

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



RAPPORT D'INSPECTION PAR RESSUAGE

P-11784

PAGE 1 DE 1

CLIENT	Dart Aerospace.	DATE	24 Oct. 2011	HEURE	AM <input checked="" type="checkbox"/> PM <input type="checkbox"/>
ATTENTION	Mme. Dinda Lincelle.	N° TRAVAIL	189-11-02375		
ADRESSE	1270 Aberdeen St. Hokenbury	N° CLIENT POWO	1152401		
	Ont. K6A 1K7	SITE DE TRAVAIL	Dart usine.		
		ACCEPTATION STD.	1417/051038	DATE/RÉV.	05
PROJET	Crosstubes inspection and stud.				
ITEM(S) EXAMINÉ	6 x Crosstubes and 5 x studs				

DESCRIPTION DES TRAVAUX	N° PROCÉDURE	LT-002	DATE/RÉV.	2007	N° TECHNIQUE	LT-002	DATE/RÉV.	2007
N° ITEMS					MATÉRIEL	Aluminium / Steel	ÉPAISSEUR	Différent
DESCRIPTION	100% Inspection (Liquid Penetrant) on surface (external) on crosstubes (6) and surface external on stud (5)							

DÉTAILS DES INSPECTIONS					
MÉTHODE :	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> LAVABLE À L'EAU	<input type="checkbox"/> MÉTHODE DISSOLVANT	<input type="checkbox"/> PRÉ-ÉMULSIONNANT
MARQUE :	Magnaflux		LUM. NOIRE S/N 16440	<input type="checkbox"/> PUISS. > 1000 µ W/cm²	<input type="checkbox"/> AMBIANT < 2 fc
PÉNÉTRANT :	Zygg 2L67	TEMPS PÉNÉTRATION MIN.	10 MIN.	ÉQUIP. LUMIÈRE	<input type="checkbox"/> LAMP. POCHE <input type="checkbox"/> LAMP. CULASSE <input type="checkbox"/> PUISS. > 100 fc @ SURFACE
DISSOLVANT PÉNÉTRANT	H2O	TEMPS SÉCHAGE MIN.	> 10 MIN.	AUTRES	LABIND (MODEL)
RÉVÉLATEUR	SAD-52	TEMPS PÉNÉTRATION MIN.	10 MIN.	MÈTRE LUM.	N/S
TYPE RÉVÉLATEUR	<input checked="" type="checkbox"/> NON AQUEUX	<input type="checkbox"/> AQUEUX	<input type="checkbox"/> SEC		DATE CAL DUE

SURFACE INSPECTÉE					
CONDITION SURFACE	<input type="checkbox"/> MEULÉE	<input type="checkbox"/> SOUDÉE	<input type="checkbox"/> MACHINÉE	<input type="checkbox"/> GRENAILLÉE	<input checked="" type="checkbox"/> MÉTAL PROPRE
TEMPÉRATURE SURFACE	<input type="checkbox"/> < - 4°C/ 20°F	<input type="checkbox"/> - 4°C/ 20°F DE 10°C/50°F	<input checked="" type="checkbox"/> 10°C/50°F DE 52°C/125°F	<input type="checkbox"/> > 52°C/125°F	

RÉSULTATS- (<input type="checkbox"/> MÉTRIQUE <input type="checkbox"/> IMPÉRIAL)					
	COMMENTAIRES	ACCEPTÉ	REJETÉ	Item ID	
1	Crosstube WO/ID 74977	✓		D212-664-107	
1	" " " 74973	✓		" " " " "	
1	" " " (74978)	✓		" " " " "	
1	" " " 74975	✓		" " " " "	
1	" " " 74965	✓		" " " " "	
1	" " " 75209	✓		" " " " "	
5	Studs WO/ID 73459	✓		" " " " "	
				D206 667 203	
				D206 667 203 D212-664-107	
				D 3688-3	

Étendue des Services

L'entente selon laquelle le Groupe Acuren Inc. exécute les services ne concerne que les énoncés par écrit. En aucune circonstance ces services ne s'étendent au-delà de l'exécution des services demandés. Il est entendu que toutes les descriptions, les observations et les expressions d'opinions faites par Acuren reflètent les opinions ou les observations de l'entreprise fondées sur l'information et les hypothèses fournies par le propriétaire/opérateur, et elles ne constituent pas des déclarations ou des garanties ou ne peuvent être interprétées comme constituant. Le Groupe Acuren Inc. n'assume aucune des responsabilités du propriétaire/opérateur, et le propriétaire/opérateur conserve la responsabilité entière des décisions prises en matière d'ingénierie, de fabrication, de réparation et d'usage à partir de l'information ou des données fournies par Acuren en rapport avec les services décrits dans les présentes ne peuvent excéder le coût des services rendus.

Norme de Diligence

Dans l'exécution des services, le Groupe Acuren Inc. applique le degré de diligence, le soin et la compétence normalement exercés dans des circonstances semblables par d'autres fournisseurs de ce type de services opérant dans la même localité ou dans une localité similaire. Aucune autre garantie, implicite ou explicite, n'est faite ou voulue par le Groupe Acuren Inc.

SIGNATURES

REPRÉSENTANT	FTJ #
TECHNICIEN (SIGNATURE)	RAPPORT RÉVISÉ PAR:
NOM (MOULÉ):	NOM
ONGC NIVEAU	INITIALES
ONGC N° REG.	